



Elon Maker Hub

Instructional & Campus Technologies STRATEGIC PLAN 2015-2019

Christopher C. Waters
Assistant Vice President for Technology and CIO

Gerald O. Whittington
Senior Vice President for Business, Finance & Technology

ELON
UNIVERSITY

CONTENT

- 03** Message from the Asst Vice President & CIO
- 04** **Technology Plan Focus Areas**
 - 05** Executive Summary
 - 08** Teaching, Learning, & Discovery
 - 16** Infrastructure
 - 19** Enterprise Solutions
 - 25** Quality of Service
 - 29** Information Security
- 31** **Appendix**
 - 32** Initiatives by Year
 - 50** Colleague Connections
 - 51** I&CT Organizational Structure
 - 52** Strategic Plan Reviewers
 - 54** External Consultant Report
 - 57** Assessment of Previous Technology Plans
 - 59** References and Future Readings



THE ROLE OF TECHNOLOGY AT ELON IS ONE OF **INNOVATION & PLANNING**

Christopher C. Waters

Assistant Vice President for Technology and CIO

MESSAGE FROM THE ASSISTANT VICE PRESIDENT FOR TECHNOLOGY AND CIO

Instructional and Campus Technologies is proud to be a strategic partner to many areas of the university. Our careful commitment to planning in support of the university's mission sets us apart from many traditional technology organizations. The broad vision and purpose of our department positions us to provide excellence in information services and seamless support. Our key organizational units provide robust infrastructure, teaching and learning technologies, enterprise software solutions, technical support, and information security to all areas of the university.

This strategic technology plan serves as a guide to support our philosophy of leading through innovation while dedicating our energies to understanding the needs of our campus partners. Each of our past strategic plans served as a building block for our rapidly growing and evolving university. The focus of this plan guides not only instructional support tools, but the systems and services that create an outstanding infrastructure for learning and for our future.

The broad themes of this strategic plan create the framework for our goals for the next four years. An obvious theme of human resources throughout the plan underscores the changing landscape in our field. The sophistication of a modern technology organization requires increased staff training, new skill development, and additional positions. Furthermore, our commitment to improve information systems and services will create efficiencies in partner units across the campus.

As Elon University moves into the final years of its current strategic plan, the Elon Commitment, this document outlines partnerships where information technology can and will invigorate the next four years at Elon.

2015-2019 TECHNOLOGY PLAN FOCUS AREAS



TEACHING, LEARNING,
& DISCOVERY



INFRASTRUCTURE



ENTERPRISE SOLUTIONS



QUALITY OF SERVICE



INFORMATION SECURITY

EXECUTIVE SUMMARY



TEACHING, LEARNING, & DISCOVERY

- 1.1 Enhance the effective use of emerging technology tools, the learning management system, and video in ways that support Elon's mission of nurturing active student engagement.
- 1.2 Provide leadership, in partnership with Academic Affairs, to examine the benefits and challenges of flipped, hybrid, and online instruction and shepherd the use of technologies that sustain, support, and deepen student learning.
- 1.3 Develop new programs, structures, and partnerships to support innovation related to using technology in teaching and learning and the overall student experience.
- 1.4 Transform Teaching and Learning Technologies' support model and services into an agile, scalable model that anticipates and meets the evolving and growing institutional technology needs.
- 1.5 Evaluate physical spaces on campus in relation to changing pedagogical models, accessibility needs, and emerging instructional technologies, and foster innovation in learning spaces.



INFRASTRUCTURE

- 2.1 Streamline information systems and services to increase accessibility by all devices (mobile phones, tablets, computers, and future devices).
- 2.2 Implement Phase II of virtual computing initiatives to save resources.
- 2.3 Improve upon and expand the network design and facility planning for future growth. Aggressively migrate appropriate data and services to hybrid cloud-based solutions for cost-effective storage, secure data back-up, and reduction of server infrastructure.



ENTERPRISE SOLUTIONS

- 3.1 Collaborate with business partners across campus when considering third party technology solutions to ensure best practices, integrations, features, support, and contract terms are realized.
- 3.2 Provide robust reporting tools to deliver more data into the hands of more people to drive better decisions across the university.
- 3.3 Utilize educational and student-related data to gain insights, decipher trends, identify patterns, and act on complex issues that impact student success.
- 3.4 Promote improved data flow and business efficiencies through the use of electronic workflow solutions.
- 3.5 Provide tools and solutions to foster a collaborative environment for students, faculty, and staff.
- 3.6 Commit to reflective continuous improvement of all business software and focus on maintaining key student and business data in the primary ERP while achieving integration with ancillary systems to realize the greatest return-on-investment.
- 3.7 Fully evaluate and challenge existing business software solutions to increase efficiencies and reduce costs.



QUALITY OF SERVICE

- 4.1 Tailor a customer service mission to the broader support philosophy of the university that is sustainable and based on metrics.
- 4.2 Invigorate a technology department-wide philosophy of sustaining core services, supporting innovation, facilitating growth, and promoting financial stewardship.
- 4.3 Establish a strong Information Technology Governance portfolio, including representatives from several campus constituencies.

- 4.4 Create a strong Project Management methodology, enabling nimble and efficient movement within projects while creating an industry standard approach to initiatives.
- 4.5 Provide professional development opportunities to our business partners and technology staff to create a culture that encourages community support.
- 4.6 Perform an assessment of the Instructional and Campus Technologies brand and implement a marketing and communications plan.



INFORMATION SECURITY

- 5.1 Provide a secure and robust information infrastructure that supports and protects the enterprise and its systems.

TEACHING, LEARNING, & DISCOVERY

Elon University values active student engagement and faculty who are dedicated to excellent teaching and scholarly accomplishment. Technology can play an integral role in facilitating teaching, learning, and discovery.



Since Elon merged several departments in 2010 to create Teaching and Learning Technologies (TLT), significant changes have occurred in consumer and educational technology. Numerous devices and applications have become a natural part of our daily lives. These new tools have prompted research on and initiatives related to flipped, blended, hybrid, mobile, and online learning. Inspired by the possibilities presented by emerging technologies, more and more Elon faculty are exploring digitally enhanced teaching and learning, adopting new pedagogical models like flipped instruction, and teaching online courses.

TLT's work is rooted in Elon's commitment to engaged, residential learning. Technology is not an end in itself, but rather an essential means to sustain, support, and deepen student learning. Leadership is needed to foster campus conversations and guide decisions related to the effective uses of technology at Elon, specific to our academic culture, student body, and commitment to a residential campus. Teaching and Learning Technologies is uniquely positioned to provide this leadership. With our active participation on strategic groups and committees, our strong partnerships across academic and administrative units, and our knowledgeable, informed, and dedicated technology staff, TLT is equipped to meet faculty, staff, and student needs and adapt to a changing technological environment. TLT is committed to support technology use across our university that simultaneously deepens student learning and encourages cutting-edge innovation.

TLT aims to create an ecosystem of instructional technology tools at Elon that reflects best practices in and current research on pedagogy, learning sciences, instructional design, assessment, and learning analytics. Partnerships with Academic Affairs, the Center for the Advancement of Teaching and Learning (CATL), the Faculty Fellow for Technology, the Emerging Technologies in Teaching and Learning Advisory Group (ETTL), the Academic Technology and Computing Committee (ATACC), other campus groups, and external partners from the Colonial Athletic Association (CAA) and elsewhere will be essential. Through consultations, training, innovative projects, knowledge sharing, and operational services, TLT is committed to being a department that is agile, actively adapts, supports innovation, and anticipates the evolving technology needs of our faculty, staff, and students in both our undergraduate and graduate programs.

TEACHING, LEARNING, & DISCOVERY INITIATIVES

- 1.1 Enhance the effective use of emerging technology tools, the learning management system, and video in ways that support Elon's mission of nurturing active student engagement.
- 1.2 Provide leadership, in partnership with Academic Affairs, to examine the benefits and challenges of flipped, hybrid, and online instruction and shepherd the use of technologies that sustain, support, and deepen student learning.
- 1.3 Develop new programs, structures, and partnerships to support innovation related to using technology in teaching and learning and the overall student experience.
- 1.4 Transform Teaching and Learning Technologies' support model and services into an agile, scalable model that anticipates and meets the evolving and growing institutional technology needs.
- 1.5 Evaluate physical spaces on campus in relation to changing pedagogical models, accessibility needs, and emerging instructional technologies, and foster innovation in learning spaces.

1.1 Enhance the effective use of emerging technology tools, the learning management system, and video in ways that support Elon’s mission of nurturing active student engagement.

Recommendations

1.1.1 **Evolve the learning management system** (LMS; currently Moodlerooms) from a static information sharing tool into an **interconnected learning ecosystem** that promotes an agile, learner-focused environment.

- Explore data connections and reporting to help faculty gain insights on individual student learning and to see a full picture of student success (see the section on “Enterprise Solutions” in this report for more information on the Learning Analytics Initiative).
- Partner with CATL to engage faculty in dialogue about learning theory and online instructional design and support faculty in integrating best practices in academic technology into their teaching.
- Explore learner-centric models and assess how our current LMS (Moodlerooms) supports (or doesn’t support) agile, personalized, and flexible learning. Take action based on findings.
- Implement an ecosystem of instructional technology tools that is grounded in instructional design theories, research, and best practices. Enable faculty to choose tools appropriate to learning outcomes.

1.1.2 Create and implement self-service and DIY opportunities for faculty and staff to **capture and share video**, including lectures, presentations, introductions to topics, and more.

- Explore and implement potential methods for self-service/DIY creation, educate users on options, and explore alternatives to existing methods.
- Develop best practices associated with video creation, including selection of recording method, script writing, lighting, sharing video content, etc.
- Fully explore and implement the features of Media Core (video hosting solution that is integrated into the learning management system). Explore and implement a live video collaboration tool and platform that is user-friendly and integrated into the LMS. Develop best practices, and partner with academic and administrative units to integrate the technology.

Recommendations

- 1.1.3 Create and implement self-service and DIY opportunities for faculty, staff, and students to **collaborate via live audio and video**.
- Explore and implement a live video collaboration tool and platform that is user-friendly and integrated into the LMS. Develop best practices, and partner with academic and administrative units to integrate the technology.
 - Develop and promote an effective replicable model that enables faculty, staff, and students to **easily connect with global experts** via video conferencing technology for learning and knowledge exchange for classes and events.
 - Explore, evaluate, and implement **classroom capture technology** in appropriate spaces to record course and classroom interactions and allow for “face-to-face” collaboration and connection from a distance.
- 1.1.4 Partner with the Media Board, the School of Communications, and Cultural and Special Programs to **showcase Elon related programming** on appropriate and available video channels. This programming could include live coverage of major university events, student productions, lectures and events recorded by Media Services, and other material submitted by the university community.
- 1.1.5 **Enhance Learning On Demand** by raising awareness, expanding the available resources, and developing academic applications for those resources.
- 1.1.6 Build relationships with **other universities in the CAA** through the Colonial Academic Alliance. Explore opportunities to connect faculty and staff, develop online courses across institutions, and **partner on projects and initiatives** related to instructional technologies.

1.2 Provide leadership, in partnership with Academic Affairs, to examine the benefits and challenges of flipped, hybrid, and online instruction and shepherd the use of technologies that sustain, support, and deepen student learning.

Recommendations

- 1.2.1 Provide leadership, foster campus conversations, and guide decisions related to the **effective uses of technology at Elon**, specific to our academic culture, student body, and commitment to a residential campus.
- 1.2.2 Support technology usage across our university that simultaneously **deepens student learning and encourages innovation** and the exploration of cutting edge technologies.

Recommendations

- 1.2.3 Develop a **comprehensive and continuous quality assurance process for online courses** with a focus on faculty training and course development/revisions in partnership with the Provost's office. Assess using benchmarks for course design, use of technology, learner interaction, and content engagement to meet learning outcomes and maintain high quality courses. Align assessment with accreditation standards.
- 1.2.4 Co-lead with Academic Affairs an **Emerging Technologies in Teaching and Learning (ETTL) Advisory Group**. Outcomes of this group include:
- Map emerging uses of technology in teaching and learning nationally in higher education and locally at Elon.
 - Advise the Provost, Senior Vice President of Business, Finance and Technology, and the CIO on shaping Elon's goals and vision for the use of technologies in teaching and learning in ways that are attentive and responsive to institutional priorities.
 - Make recommendations for ways to foster innovations, including identifying ways Elon might explore or implement emerging technologies in teaching and learning.

1.3 Develop new programs, structures, and partnerships to support innovation related to using technology in teaching and learning and the overall student experience.

Recommendations

- 1.3.1 Implement a **program** in partnership with the Provost's office that supports faculty in innovative projects with technology to support student learning. Assess each project, and evaluate options for ongoing funding.
- 1.3.2 Partner with the **Faculty Fellow for Technology** to identify, explore, and implement an initiative that focuses on emerging uses of technology appropriate to Elon's mission.
- 1.3.3 **Develop and support a culture of innovation.** Create a program that encourages the creation of teams of technology staff and faculty to explore cutting edge ideas in technology where uncertainty and failure are accepted.
- 1.3.4 Partner with the Library and CATL to **explore the implementation of Open Educational Resources (OER)** to support the curriculum, while demonstrating sensitivity and alternatives to traditional high-cost course textbooks. Develop a cohort program for faculty interested in utilizing technology to create course materials, learning objects, and modules to be used across common and interdisciplinary courses across the university.

Recommendations

- 1.3.5 Implement a **model of assessment** to continually evaluate the use of, satisfaction levels, and impact on learning outcomes of tools, systems, projects, pilots, initiatives, and services offered by TLT. Utilize the data from these assessments to develop evidence-based teaching and learning practices.
- 1.3.6 **Build communities** of faculty and staff interested in engaging in conversations related to technology. Utilize face-to-face, online, and social media outlets to create avenues for sharing ideas, asking questions, and fostering connections across our university. Encourage collaboration and communities of learning.
- 1.3.7 Partner with the Office of the Registrar, Student Life, and other Academic Affairs units to **develop an electronic transcript** that captures and visually displays students' learning and course progress. Investigate digital badges to acknowledge skill development and competencies for students that could tie into the Elon Experiences Transcript (EET).

1.4 Transform Teaching and Learning Technologies' support model and services into an agile, scalable model that anticipates and meets the evolving and growing institutional technology needs.

Recommendations

- 1.4.1 Provide appropriate staffing structures to support faculty who embrace flipped, hybrid, and online models of teaching and learning.
 - **Position** - Hire one (1) additional **Instructional Technologist** to support faculty in the use of flipped, hybrid, and online teaching and learning.
- 1.4.2 Provide appropriate staffing structures to support growing campus facilities.
 - **Position** - Hire one (1) **Production Engineer** to support the expansion of facilities in the School of Communications.
 - **Position** - Hire two (2) **Event Support Specialists** to support the Schar Center and the growing square footage of event spaces.
- 1.4.3 Develop guidelines, criteria, and governance models to **determine priorities, quality standards, and level of support** offered for academic and administrative projects and services.
- 1.4.4 **Define our production and support model of online training and module development** that support administrative units rolling out new software, systems, and procedures.

Recommendations

- 1.4.5 **Evaluate our partnership with other creative and AV service providers**, such as University Communications, Print Services, and Cultural and Special Programs. Identify areas of overlapping services, pinpoint intersections of common interest, and provide our campus community with a clear path of who to go to for services based upon their audience and need.

1.5 Evaluate physical spaces on campus in relation to changing pedagogical models, accessibility needs, and emerging instructional technologies, and foster innovation in learning spaces.

Recommendations

- 1.5.1 Partner with Residence Life and Academic Affairs to **build a maker hub** to create a place to tinker, imagine, learn, collaborate, invent, and experience.
- Develop and foster a maker culture by marketing the maker hub as a place where students, faculty, and staff can work together to create projects that integrate technology, science, mechanical, and artistic elements.
 - Develop programming and events that encourage faculty, staff, and students to gather in this space to share ideas and lead workshops around a particular technology or technique.
- 1.5.2 **Cultivate a shared vision for learning spaces** within the context of Elon's emphasis on engaged learning and emerging instructional technologies that are re-shaping pedagogical approaches.
- Collaborate with faculty and administrative divisions to establish learning space standards based on sound pedagogical, accessibility, and technical principles.
 - Increase awareness of existing and new spaces through faculty development opportunities focused on the pedagogical use of space and through promotional and informational resources.
 - Develop a process to continually assess learning spaces and use these results to enhance and improve existing and new spaces
- 1.5.3 Implement an ongoing program to **facilitate experimentation and evaluation** of new technologies, room setups and features, furniture, and more. Utilize computer lab space that is being reduced because of virtualization to build innovative classrooms.

Recommendations

- 1.5.4 Build an Elon version of a **SCALE-UP classroom** (Student-Centered Active Learning Environment for Undergraduate Programs), allowing for increased opportunities for faculty to co-teach courses and collaborate between courses with shared learning outcomes.
- 1.5.5 Provide **faculty development opportunities** to maximize the return on investment and the use of learning spaces in teaching and learning.
- 1.5.6 Partner with the Faculty Fellow for Technology to **establish a campus culture** for students of **Bring Your Own Device (BYOD)**. Guide faculty in pedagogical techniques to leverage the use of devices in teaching and learning. Provide best practices to students related to reducing distractions, self-management, and appropriate engagement of devices.

INFRASTRUCTURE

Elon's robust and extensive wired and wireless infrastructure supports residential, academic, and administrative services. In 2006, Instructional & Campus Technologies (I&CT) began building an on premise Private Cloud infrastructure using VMWare's virtual server technology. The goal for this project was to transition physical servers to the new private cloud environment that offered extendable, efficient, and reliable virtual infrastructure that met campus computing needs.



As the computing needs of the University have rapidly increased, we have adopted a hybrid cloud strategy, focusing on an external “cloud first” strategy for all new applications/services. I&CT has focused on the drivers and business need of a new solution and to see if it is a “right fit” for the external cloud. If during our research and evaluation it is deemed that a solution is unfit for the cloud, I&CT deploys it in the on-site private cloud.

Cloud strategy is evaluated on a regular basis, and IT will make changes as warranted to the approach. Part of the strategy is to provide a business analysis to each solution considered to help coordinate and work with internal and external stakeholders to help better define the business case, requirements, and technical specifications.

INFRASTRUCTURE INITIATIVES

- 2.1 Streamline information systems and services to increase accessibility by all devices (mobile phones, tablets, computers, and future devices).
- 2.2 Implement Phase II of virtual computing initiatives to save resources.
- 2.3 Improve upon and expand the network design and facility planning for future growth. Aggressively migrate appropriate data and services to hybrid cloud-based solutions for cost-effective storage, secure data back-up, and reduction of server infrastructure.

2.1 Streamline information systems and services to increase accessibility by all devices (mobile phones, tablets, computers, and future devices).

Recommendations

- 2.1.1 Create **effective video content service solutions** that include a mobile-friendly interface (easy archiving and storage solutions).
- 2.1.2 Implement a centralized and unified **network access policy management tool** to provide consistent, secure access to end-users.
- 2.1.3 Manage all **mobile devices** brought to Elon in a consistent manner to provide **increased security and access** to Elon services.
- 2.1.4 **Incorporate training and development** as new systems are deployed and upgraded, creating a supportable environment.

2.2 Implement Phase II of virtual computing initiatives to save resources.

Recommendations

- 2.2.1 **Increase buy-in with faculty** in discipline-specific software so that the mobile device of choice interacts with integrated systems.
- 2.2.2 Purchase additional XenApp licenses enabling faculty to use **virtual software solutions** in courses.
- 2.2.3 Encourage a **Bring Your Own Device (BYOD) culture** among students, faculty, and staff within learning spaces to enhance their technology experiences and continue the **reduction in physical computer labs**.

2.3 Improve upon and expand the network design and facility planning for future growth. Aggressively migrate appropriate data and services to hybrid cloud-based solutions for cost-effective storage, secure data back-up, and reduction of server infrastructure.

Recommendations

- 2.3.1 Deploy a **“cloud first” strategy** for any new systems in implementation. Fully utilize and fund SaaS (software as a service) options to support applications and information systems.
- 2.3.2 Continue to **improve the wireless network** reliability, diversity, and backup, within and outside campus buildings by systematically upgrading our access points to new technologies.
- 2.3.3 Redesign and replace **wired infrastructure within the Historic Campus**.
- 2.3.4 Develop a **budget strategy to deploy and refresh infrastructure** supporting the growth and complexity surrounding the transmission of audio and video both internally (between buildings and venues on campus) and externally through video conferencing, telepresence, streaming, placements in national media, live reports from student news organizations, and more. Take appropriate actions based on funding received.
- 2.3.5 Continue to monitor and **increase our Internet Bandwidth** capacity based on historical trends and fund appropriate increases.
- 2.3.6 Continue to **enhance security** by:
- Researching and implementing two factor authentication, comparing DuoSecurity and SafeNet, with the existing RSA provider. Once the primary vendor is selected, expand two factor authentication to all mission critical applications and services.
 - Moving forward with the planning and deployment of IPv6 (new internet protocol standard).
 - Improving our ability to scan internal and external systems and services to assess compliance with regulations and evaluate the severity of issues.
 - Continuing to expand the implementation of the intrusion detection/prevention system.
 - Researching and implementing a Security Information and Event Management system.
- 2.3.7 In cooperation with University Archives in Belk Library and University Communications, investigate best practices and solutions to consolidate storage, retrieval, and **archives for all campus data and digital media**.

ENTERPRISE SOLUTIONS

As the university has grown, so has the sophistication of systems that support it. No longer does the “one size fits all” approach to systems apply; instead, departments across campus are finding third-party software solutions that serve their specific needs – from Admissions customer relationship management (CRM) to Study Abroad. An outsourced solution often provides a “best in class” approach to doing business, while being configurable to adapt to specific workflows and needs.



I&CT is committed to partnering with departments contemplating a relationship with a technology vendor. There are several key factors to consider:

- Features and innovation
- Infrastructure required
- Security
- Integration options
- Licensing and support
- Cost
- Legal and regulatory compliance

Evaluating the features offered is the most obvious step. Typically, an off-the-shelf product will not mimic Elon’s process identically, so it is also important to take time to review process workflows and look for opportunities to improve existing workflows in ways that are better supported by the tool.

One of the initial concerns with implementing a new solution is understanding what infrastructure is required to maintain the system. Currently, Elon has a mix of third party solutions that are hosted (i.e. Studio Abroad, Slate, WebCheckout, Moodlerooms) and on-premise (i.e. SPACES, TMA, Pave). For hosted solutions, questions exist related to the security of the servers and access to the data that should be reviewed.

As data moves outside of the central business software system (Colleague), and in many cases completely off-site, integration options become an important factor. Currently, there are over 30 connections to Colleague and several other ancillary systems to manage (see Colleague Connections Chart in Appendix).

Reporting needs are often offered within the solution, but there is a growing need to aggregate that data for inclusion in reports that connect across the entire institution.

In addition, managing vendor relationships will have a huge impact on the success of an outsourced solution. Service level agreements should establish expectations for timely support should an issue arise. Understanding the customer service model and hours of operation will help set appropriate expectations of the vendor.

ENTERPRISE SOLUTIONS INITIATIVES

- 3.1 Collaborate with business partners across campus when considering third party technology solutions to ensure best practices, integrations, features, support, and contract terms are realized.
- 3.2 Provide robust reporting tools to deliver more data into the hands of more people to drive better decisions across the university.
- 3.3 Utilize educational and student-related data to gain insights, decipher trends, identify patterns, and act on complex issues that impact student success.
- 3.4 Promote improved data flow and business efficiencies through the use of electronic workflow solutions.
- 3.5 Provide tools and solutions to foster a collaborative environment for students, faculty, and staff.
- 3.6 Commit to reflective continuous improvement of all business software and focus on maintaining key student and business data in the primary ERP while achieving integration with ancillary systems to realize the greatest return-on-investment.
- 3.7 Fully evaluate and challenge existing business software solutions to increase efficiencies and reduce costs.

3.1 Collaborate with business partners across campus when considering third party technology solutions to ensure best practices, integrations, features, support, and contract terms are realized.

Recommendations

3.1.1 Establish a formal entry process for **acquiring and integrating new software solutions** to address contract review, data security, maintenance costs, and service level agreements.

3.2 Provide robust reporting tools to deliver more data into the hands of more people to drive better decisions across the university.

Recommendations

3.2.1 Implement **Visual Analytics proof of concept** for the Provost's office and begin implementation for other units.

3.2.2 **Position** - Hire one (1) **business analytics/intelligence** staff member who can be dedicated to developing reports and dashboards to answer strategic questions.

3.2.3 **Position** - Hire one (1) **database administrator (DBA)** to provide backup to existing DBA and help implement a data warehouse to support all university information systems.

3.2.4 Build a **data warehouse** to provide better reporting and analytics using consistent data across the many university information systems.

3.2.5 Partner with University Advancement to invest resources to **improve data cleansing and overall data health** and excellence.

3.2.6 **Evaluate the value of Visual Analytics** as a full-scale project.

3.2.7 **Design and/or purchase innovative solutions** that respond to **increasing needs for dashboards and broader analytics** across growing constituents like alumni, parents, and friends of the university.

3.3 Utilize educational and student-related data to gain insights, decipher trends, identify patterns, and act on complex issues that impact student success.

Recommendations

3.3.1 **Initiate a Learning Analytics Initiative** that identifies key focus areas that can be heavily influenced by data-driven analysis, such as creating an early warning system to help identify academically at-risk students, supporting a learner-centric curriculum, etc.

- Identify the data to be collected and the relationships between the data, trends, and desired outcomes.
- Determine organizational and infrastructure needs to effectively capture and interpret learning analytics.
- Create intuitive data display models that support faculty, staff, and students in effectively interpreting results to make data-informed decisions.

3.4 Promote improved data flow and business efficiencies through the use of electronic workflow solutions.

Recommendations

3.4.1 Review current paper-driven and manual processes to **develop electronic** ways to submit **forms**, complete sign-up sheets, process changes, and manage registrations while keeping **data integration needs** as a primary driver for the appropriate solution (OnTrack, Colleague, custom web development, SharePoint, or third party).

3.4.2 **Evaluate the effectiveness of the existing document management system** in meeting the campus needs for document imaging and implement upgrades to the existing system and/or recommend implementing a new document management system to more effectively integrate with Colleague and other enterprise applications.

3.4.3 Integrate SharePoint solutions with core ERP data to **reduce shadow databases**.

3.4.4 Train key users throughout campus to become **SharePoint Power Users** who will learn to create their own forms and workflow solutions with oversight from I&CT.

3.4.5 Work with administrative and academic divisions to **streamline processes and reduce paper**.

3.5 Provide tools and solutions to foster a collaborative environment for students, faculty, and staff.

Recommendations

- 3.5.1 Improve **access to student information** (i.e., calendaring, student organizations, opportunities for social interaction using a single sign-on solution, and mobile technology).
- 3.5.2 Establish **data governance guidelines** and best practices for students, staff, and faculty to understand the risks and security implications of sharing institutional data across all systems.
- 3.5.3 Implement the **full suite of Microsoft Office 365 applications** to faculty and staff.
- 3.5.4 **Explore moving students from Google accounts to Microsoft Office 365 accounts**, allowing for a consolidated platform to increase communication and collaboration opportunities. Take action based on findings.
- 3.5.5 Implement the use of Team Sites in SharePoint for **departmental and committee collaboration and file sharing**.

3.6 Commit to reflective continuous improvement of all business software and focus on maintaining key student and business data in the primary ERP while achieving integration with ancillary systems to realize the greatest return-on-investment.

Recommendations

- 3.6.1 Utilize the tools we have more effectively by **engaging vendor consultants** to address challenges and present best practices.
- 3.6.2 Evaluate and implement a **financial reporting solution** with full integration.
- 3.6.3 Implement a **Financial Aid self-service** solution.
- 3.6.4 Integrate the **Hiring form** with the ERP to streamline the process.

Recommendations

- 3.6.5 **Improve integration and reporting** for undergraduate and graduate admissions.
- 3.6.6 Improve access to information systems using **single sign-on technology** to create a personalized experience for students, faculty, and staff.
- 3.6.7 **Position** - Hire one (1) **application developer** staff member who will **support SharePoint** projects, workflows, and integration with enterprise systems.

3.7 Fully evaluate and challenge existing business software solutions to increase efficiencies and reduce costs.

Recommendations

- 3.7.1 Engage Ellucian to provide Action Planning recommendations within the suite of products offered to **strengthen operational excellence** and **foster institutional effectiveness**.
- 3.7.2 Consider the offerings of other ERP solutions to evaluate the business case, costs, and potential savings if a change were recommended.
- 3.7.3 **Make a recommendation** for an ERP solution that will serve the future business needs and improve efficiencies.

QUALITY OF SERVICE

The support units within I&CT continue to develop and implement a customer first strategy. This strategy enables our campus community to have the best experience every time they interact with technology. Using this approach, the team will continue to build a superior IT service organization focusing on strategic hiring, training, and communication methods to ensure success.



QUALITY OF SERVICE INITIATIVES

- 4.1 Tailor a customer service mission to the broader support philosophy of the university that is sustainable and based on metrics.
- 4.2 Invigorate a technology department-wide philosophy of sustaining core services, supporting innovation, facilitating growth, and promoting financial stewardship.
- 4.3 Establish a strong Information Technology Governance portfolio, including representatives from several campus constituencies.
- 4.4 Create a strong Project Management methodology, enabling nimble and efficient movement within projects while creating an industry standard approach to initiatives.
- 4.5 Provide professional development opportunities to our business partners and technology staff to create a culture that encourages community support.
- 4.6 Perform an assessment of the Instructional and Campus Technologies brand and implement a marketing and communications plan.

4.1 Tailor a customer service mission to the broader support philosophy of the university that is sustainable and based on metrics.

Recommendations

- 4.1.1 Enable a well-constructed **service desk software tool** that can handle support across the enterprise of I&CT.
- 4.1.2 **Help our users help themselves** – update online documentation regularly, write relevant blog posts, and create self-service tools that are easy to use.
- 4.1.3 Create a **shared services unit** to provide portions of staff time to support higher technical areas (Human Resources, Police and Security, the Phoenix Card office, etc.).
- 4.1.4 Build a **support structure that supports growth** in facilities and expansion of the campus in remote locations.
- 4.1.5 **Positions** - Hire **two (2) general computer technicians** with assigned time to operational areas requiring additional technology support due to complexity and data needs.
- 4.1.6 **Evaluate current positions and titles** to meet industry standards and best practices.

4.2 Invigorate a technology department-wide philosophy of sustaining core services, supporting innovation, facilitating growth, and promoting financial stewardship.

Recommendations

- 4.2.1 Scaffold greater alliances with business partners during the budget and planning processes to **plan new technology projects collectively**.
- 4.2.2 Examine basic computer needs for all users to **determine the new standard for personal computing and telecommunications**.

4.3 Establish a strong Information Technology Governance portfolio, including representatives from several campus constituencies.

Recommendations

- 4.3.1 **Build upon ATACC** (Academic Technology and Computing Committee) relationships.
- 4.3.2 Establish a **Student Advisory Board** for active student feedback.
- 4.3.3 Establish an **Administrative Advisory Group** and redefine the **Administrative Computing User Group**.
- 4.3.4 Create **data governance guidelines** for students, faculty, and staff in partnership with advisory groups.

4.4 Create a strong Project Management methodology, enabling nimble and efficient movement within projects while creating an industry standard approach to initiatives.

Recommendations

- 4.4.1 Create an internal **Project Management certification program** for I&CT staff.
- 4.4.2 Formally **track and manage all high-impact enterprise projects** throughout the division.

4.5 Provide professional development opportunities to our business partners and technology staff to create a culture that encourages community support.

Recommendations

- 4.5.1 Establish **baseline technical proficiencies** that should be met by all staff in order to work effectively in a collaborative, fast-paced environment.
 - Develop an assessment tool to determine if an individual meets Elon's baseline technical proficiencies.
 - Create a training and development model that enables staff to easily get up to speed with baseline proficiencies.
 - Partner with Human Resources to establish technical skill requirements for new hires.

Recommendations

- 4.5.2 Partner with the Office of Leadership and Professional Development, Academic Affairs, and Human Resources to investigate digital badges and the development of a **system to track professional development activity**, acknowledge skill development, and show proven competencies for staff. Explore possible connections of this system with current methods of evaluating employee performance.
- 4.5.3 Train staff members to **improve their understanding and use of Colleague and other key information systems**, and utilize Ellucian's eLearning library to more effectively learn about department specific functionality.
- 4.5.4 **Identify and train key staff members** in departments across campus to serve in the **Technology Champion Program** and become a resource for training within their department and across the campus community.
- 4.5.5 **Identify and train key faculty members** in departments across campus to serve as leaders for **integrating technology** into teaching and learning.

4.6 Perform an assessment of the Instructional and Campus Technologies brand and implement a marketing and communications plan.

Recommendations

- 4.6.1 **Assess the branding and current marketing of Instructional and Campus Technologies** as a central resource for the larger Elon community at all campus locations.
- 4.6.2 Collect stakeholder feedback, **propose a change to the parent name of the division to the Office of Information Technology**, and evaluate the names of the five departments within technology.
- 4.6.3 Implement a **marketing and communications plan** to show the value of technology at Elon and to meet the changing informational needs of faculty, staff, students, prospective students, and alumni. Develop a plan that educates users on technology services and offerings, provides updates to our community on changing services, promotes the work of the technology staff, and showcases our faculty, staff, and students' use of technology in teaching, learning, business functions, and more.

INFORMATION SECURITY

Elon University's mission is that of an academic community that transforms mind, body, and spirit and encourages freedom of thought and liberty of conscience. Providing a secure and robust information technology infrastructure that supports this mission is critical.



Because Elon University bears the responsibility for taking steps to protect the confidentiality, integrity, and availability of information in its custody, whether in electronic or material form, an effective Information Security Program must ensure:

- Development of information security policies and adoption of best practices
- Oversight and regulatory compliance across the entire university
- Vulnerability assessment and remediation
- Incident response
- Network and systems monitoring
- Forensic analysis
- IT security consulting
- Information systems awareness training
- Business resilience

Moreover, an information security program requires the cooperation and collaboration of the entire university community; therefore, this information security strategy applies not just to IT, but to the entire university, including all campuses and centers.

INFORMATION SECURITY INITIATIVES

- 5.1** Provide a secure and robust information infrastructure that supports and protects the enterprise and its systems.

5.1 Provide a secure and robust information infrastructure that supports and protects the enterprise and its systems.

Recommendations

- 5.1.1 Complete **external audits** for data penetration and policy evaluation **every two (2) years**.
- 5.1.2 **Position** - Hire one (1) **Information Security Director** to focus on data security, policy, and compliance.
- 5.1.3 Create and train an **information security team** using internal staff to assist with communications and procedures.
- 5.1.4 Develop **new IT security policies** and adopt best practices for compliance of sensitive data.
- 5.1.5 Integrate a **Security Information and Event Management system** into our infrastructure for logging and tracking incidents.
- 5.1.6 Increase **data security training** for positions accessing sensitive data.
- 5.1.7 Redefine and publish **business continuity expectations** with critical systems for operations (Disaster Recovery Models).
- 5.1.8 Create and provide a **robust training program for different compliance areas** that handle and regulate sensitive institutional data, such as FERPA and other similar information.
- 5.1.9 Provide faculty and staff tools necessary to **detect and eliminate unnecessary sensitive data** on Elon University systems.
- 5.1.10 **Integrate Security Analysis** into the evaluation and purchasing process for software that will process or store High Risk Data so that appropriate data security requirements can be determined early in the process.

2015-2019 TECHNOLOGY PLAN

APPENDIX

INITIATIVES BY YEAR

COLLEAGUE CONNECTIONS

Applications Connected to Colleague, Elon University's ERP System

INSTRUCTIONAL & CAMPUS TECHNOLOGIES ORGANIZATIONAL STRUCTURE

STRATEGIC PLAN REVIEWERS

Those members of the Elon University community who reviewed this document throughout the planning and writing process.

EXTERNAL CONSULTANT REPORT

I&CT engaged an external consultant, to complete an external review of the organization's goals, commitment and ability to serve the Elon University community, and overall value to the university.

ASSESSMENT OF PREVIOUS TECHNOLOGY PLANS

Continuing with its rich culture of planning, Elon University has completed numerous strategic plans setting a pace for intense growth and maturity of services to our students, faculty, and staff.

REFERENCES AND FUTURE READINGS

INITIATIVES BY YEAR

TEACHING, LEARNING, & DISCOVERY

1 Year 1 2 Year 2 3 Year 3 4 Year 4

| # | RECOMMENDATION | YEAR(S) | | | |
|-------|--|---------|---|---|---|
| 1.1 | Enhance the effective use of emerging technology tools, the learning management system, and video in ways that support Elon’s mission of nurturing active student engagement. | | | | |
| 1.1.1 | Evolve the learning management system (LMS; currently Moodlerooms) from a static information sharing tool into an interconnected learning ecosystem that promotes an agile, learner-focused environment. | | 2 | 3 | 4 |
| 1.1.2 | Create and implement self-service and DIY opportunities for faculty and staff to capture and share video, including lectures, presentations, introductions to topics, and more. | | 2 | | |
| 1.1.3 | Create and implement self-service and DIY opportunities for faculty, staff, and students to collaborate via live audio and video. | 1 | 2 | 3 | |
| 1.1.4 | Partner with the Media Board, the School of Communications, and Cultural and Special Programs to showcase Elon related programming on appropriate and available video channels. | | 2 | | |
| 1.1.5 | Enhance Learning On Demand by raising awareness, expanding the available resources, and developing academic applications for those resources. | 1 | | | |

| | | | | | |
|-------|---|---|---|---|---|
| 1.1.6 | Build relationships with other universities in the CAA through the Colonial Academic Alliance. Explore opportunities to connect faculty and staff, develop online courses across institutions, and partner on projects and initiatives related to instructional technologies. | 1 | 2 | 3 | 4 |
| 1.2 | Provide leadership, in partnership with Academic Affairs, to examine the benefits and challenges of flipped, hybrid, and online instruction and shepherd the use of technologies that sustain, support, and deepen student learning. | | | | |
| 1.2.1 | Provide leadership, foster campus conversations, and guide decisions related to the effective uses of technology at Elon, specific to our academic culture, student body, and commitment to a residential campus. | | 2 | 3 | 4 |
| 1.2.2 | Support technology usage across our university that simultaneously deepens student learning and encourages innovation and the exploration of cutting edge technologies. | 1 | 2 | 3 | 4 |
| 1.2.3 | Develop a comprehensive and continuous quality assurance process for online courses with a focus on faculty training and course development/ revisions in partnership with the Provost's office. | 1 | 2 | | |
| 1.2.4 | Co-lead with Academic Affairs an Emerging Technologies in Teaching and Learning (ETTL) Advisory Group. | 1 | 2 | 3 | 4 |
| 1.3 | Develop new programs, structures, and partnerships to support innovation related to using technology in teaching and learning and the overall student experience. | | | | |
| 1.3.1 | Implement a program in partnership with the Provost's office that supports faculty in innovative projects with technology to support student learning. | | 2 | 3 | 4 |

| | | | | | |
|-------|---|---|---|---|---|
| 1.3.2 | Partner with the Faculty Fellow for Technology to identify, explore, and implement an initiative that focuses on emerging uses of technology appropriate to Elon's mission. | 1 | 2 | 3 | 4 |
| 1.3.3 | Develop and support a culture of innovation. Create a program that encourages the creation of teams of technology staff and faculty to explore cutting edge ideas in technology where uncertainty and failure are accepted. | | 2 | 3 | 4 |
| 1.3.4 | Partner with the Library and CATL to explore the implementation of Open Educational Resources (OER) to support the curriculum, while demonstrating sensitivity and alternatives to traditional high-cost course textbooks. | | | 3 | 4 |
| 1.3.5 | Implement a model of assessment to continually evaluate the use of, satisfaction levels, and impact on learning outcomes of tools, systems, projects, pilots, initiatives, and services offered by TLT. | | 2 | | |
| 1.3.6 | Build communities of faculty and staff interested in engaging in conversations related to technology. | 1 | 2 | 3 | 4 |
| 1.3.7 | Partner with the Office of the Registrar, Student Life, and other Academic Affairs units to develop an electronic transcript that captures and visually displays students' learning and course progress. | | 2 | | |
| 1.4 | Transform Teaching and Learning Technologies' support model and services into an agile, scalable model that anticipates and meets the evolving and growing institutional technology needs. | | | | |
| 1.4.1 | Hire one (1) additional Instructional Technologist to support faculty in the use of flipped, hybrid, and online teaching and learning. | | | 3 | |

| | | | | | |
|-------|--|---|---|---|---|
| 1.4.2 | Hire one (1) Production Engineer to support the expansion of facilities in the School of Communications. Hire two (2) Event Support Specialists to support the Schar Center and the growing square footage of event spaces. | | 2 | 3 | 4 |
| 1.4.3 | Develop guidelines, criteria, and governance models to determine priorities, quality standards, and level of support offered for academic and administrative projects and services. | | 2 | | |
| 1.4.4 | Define our production and support model of online training and module development that support administrative units rolling out new software, systems, and procedures. | | 2 | | |
| 1.4.5 | Evaluate our partnership with other creative and AV service providers, such as University Communications, Print Services, and Cultural and Special Programs. | | | 3 | |
| 1.5 | Evaluate physical spaces on campus in relation to changing pedagogical models, accessibility needs, and emerging instructional technologies, and foster innovation in learning spaces. | | | | |
| 1.5.1 | Partner with Residence Life and Academic Affairs to build a maker hub to create a place to tinker, imagine, learn, collaborate, invent, and experience. | 1 | 2 | 3 | 4 |
| 1.5.2 | Cultivate a shared vision for learning spaces within the context of Elon's emphasis on engaged learning and emerging instructional technologies that are re-shaping pedagogical approaches. | 1 | 2 | 3 | |
| 1.5.3 | Implement an ongoing program to facilitate experimentation and evaluation of new technologies, room setups and features, furniture, and more. Utilize computer lab space that is being reduced because of virtualization to build innovative classrooms. | | 2 | 3 | 4 |

| | | | | | |
|-------|--|--|---|---|---|
| 1.5.4 | Build an Elon version of a SCALE-UP classroom (Student-Centered Active Learning Environment for Undergraduate Programs), allowing for increased opportunities for faculty to co-teach courses and collaborate between courses with shared learning outcomes. | | | | 4 |
| 1.5.5 | Provide faculty development opportunities to maximize the return on investment and the use of learning spaces in teaching and learning. | | 2 | 3 | 4 |
| 1.5.6 | Partner with the Faculty Fellow for Technology to establish a campus culture for students of Bring Your Own Device (BYOD). Guide faculty in pedagogical techniques to leverage the use of devices in teaching and learning. | | 2 | 3 | 4 |

INFRASTRUCTURE

1 Year 1 2 Year 2 3 Year 3 4 Year 4

| # | RECOMMENDATION | YEAR(S) | | | |
|-------|--|---------|---|---|---|
| 2.1 | Streamline information systems and services to increase accessibility by all devices (mobile phones, tablets, computers, and future devices). | | | | |
| 2.1.1 | Create effective video content service solutions that include a mobile-friendly interface (easy archiving and storage solutions). | | 2 | | |
| 2.1.2 | Implement a centralized and unified network access policy management tool to provide consistent, secure access to end-users. | 1 | | | |
| 2.1.3 | Manage all mobile devices brought to Elon in a consistent manner to provide increased security and access to Elon services. | 1 | | | |
| 2.1.4 | Incorporate training and development as new systems are deployed and upgraded, creating a supportable environment. | | 2 | | |
| 2.2 | Implement Phase II of virtual computing initiatives to save resources. | | | | |
| 2.2.1 | Increase buy-in with faculty in discipline-specific software so that the mobile device of choice interacts with integrated systems. | | | 3 | |
| 2.2.2 | Purchase additional XenApp licenses enabling faculty to use virtual software solutions in courses. | | | 3 | 4 |
| 2.2.3 | Encourage a Bring Your Own Device (BYOD) culture among students, faculty, and staff within learning spaces to enhance their technology experiences and continue the reduction in physical computer labs. | | | 3 | |

| | | | | | |
|-------|--|---|---|---|---|
| 2.3 | Improve upon and expand the network design and facility planning for future growth. Aggressively migrate appropriate data and services to hybrid cloud-based solutions for cost-effective storage, secure data back-up, and reduction of server infrastructure. | | | | |
| 2.3.1 | Deploy a “cloud first” strategy for any new systems in implementation. Fully utilize and fund SaaS (software as a service) options to support applications and information systems. | 1 | 2 | 3 | 4 |
| 2.3.2 | Continue to improve the wireless network reliability, diversity, and backup, within and outside campus buildings by systematically upgrading our access points to new technologies. | 1 | 2 | 3 | 4 |
| 2.3.3 | Redesign and replace wired infrastructure within the Historic Campus. | | | 3 | 4 |
| 2.3.4 | Develop a budget strategy to deploy and refresh infrastructure supporting the growth and complexity surrounding the transmission of audio and video both internally (between buildings and venues on campus) and externally through video conferencing, telepresence, streaming, placements in national media, live reports from student news organizations, and more. | | | 3 | |
| 2.3.5 | Continue to monitor and increase our Internet Bandwidth capacity based on historical trends and fund appropriate increases. | 1 | 2 | 3 | 4 |
| 2.3.6 | Continue enhanced security (deployment of client side security and IPv6). | 1 | 2 | 3 | 4 |
| 2.3.7 | In cooperation with University Archives in Belk Library and University Communications, investigate best practices and solutions to consolidate storage, retrieval, and archives for all campus data and digital media. | | | 3 | |

ENTERPRISE SOLUTIONS

1 Year 1 2 Year 2 3 Year 3 4 Year 4

| # | RECOMMENDATION | YEAR(S) | | | |
|-------|--|---------|---|---|--|
| 3.1 | Collaborate with business partners across campus when considering third party technology solutions to ensure best practices, integrations, features, support, and contract terms are realized. | | | | |
| 3.1.1 | Establish a formal entry process for acquiring and integrating new software solutions to address contract review, data security, maintenance costs, and service level agreements. | 1 | 2 | | |
| 3.2 | Provide robust reporting tools to deliver more data into the hands of more people to drive better decisions across the university. | | | | |
| 3.2.1 | Implement Visual Analytics proof of concept for the Provost’s office and begin implementation for other units. | 1 | 2 | | |
| 3.2.2 | Hire one (1) business analytics/intelligence staff member who can be dedicated to developing reports and dashboards to answer strategic questions. | | | 3 | |
| 3.2.3 | Hire one (1) database administrator (DBA) to provide backup to existing DBA and help implement a data warehouse to support all university information systems. | | 2 | | |
| 3.2.4 | Build a data warehouse to provide better reporting and analytics using consistent data across the many university information systems. | | 2 | 3 | |
| 3.2.5 | Partner with University Advancement to invest resources to improve data cleansing and overall data health and excellence. | | 2 | | |

| | | | | | |
|-------|---|---|---|---|---|
| 3.2.6 | Evaluate the value of Visual Analytics as a full-scale project. | | | 3 | |
| 3.2.7 | Design and/or purchase innovative solutions that respond to increasing needs for dashboards and broader analytics across growing constituents like alumni, parents, and friends of the university. | | 2 | | |
| 3.3 | Utilize educational and student-related data to gain insights, decipher trends, identify patterns, and act on complex issues that impact student success. | | | | |
| 3.3.1 | Initiate a Learning Analytics Initiative that identifies key focus areas that can be heavily influenced by data-driven analysis, such as creating an early warning system to help identify academically at-risk students, supporting a learner-centric curriculum, etc. | | | 3 | 4 |
| 3.4 | Promote improved data flow and business efficiencies through the use of electronic workflow solutions. | | | | |
| 3.4.1 | Review current paper-driven and manual processes to develop electronic ways to submit forms, complete sign-up sheets, process changes, and manage registrations while keeping data integration needs as a primary driver for the appropriate solution (OnTrack, Colleague, custom web development, SharePoint, or third party). | 1 | 2 | 3 | 4 |
| 3.4.2 | Evaluate the effectiveness of the existing document management system in meeting the campus needs for document imaging and implement upgrades to the existing system and/or recommend implementing a new document management system to more effectively integrate with Colleague and other enterprise applications. | | | 3 | 4 |
| 3.4.3 | Integrate SharePoint solutions with core ERP data to reduce shadow databases. | | 2 | | |

| | | | | | |
|-------|--|---|---|---|---|
| 3.4.4 | Train key users throughout campus to become SharePoint Power Users who will learn to create their own forms and workflow solutions with oversight from I&CT. | 1 | 2 | 3 | 4 |
| 3.4.5 | Work with administrative and academic divisions to streamline processes and reduce paper. | 1 | 2 | 3 | 4 |
| 3.5 | Provide tools and solutions to foster a collaborative environment for students, faculty, and staff. | | | | |
| 3.5.1 | Improve access to student information (i.e., calendaring, student organizations, opportunities for social interaction using a single sign-on solution, and mobile technology). | | | 3 | |
| 3.5.2 | Establish data governance guidelines and best practices for students, staff, and faculty to understand the risks and security implications of sharing institutional data across all systems. | | 2 | | |
| 3.5.3 | Implement the full suite of Microsoft Office 365 applications to faculty and staff. | | | 3 | |
| 3.5.4 | Explore moving students from Google accounts to Microsoft Office 365 accounts, allowing for a consolidated platform to increase communication and collaboration opportunities. | | 2 | 3 | 4 |
| 3.5.5 | Implement the use of Team Sites in SharePoint for departmental and committee collaboration and file sharing. | | | 3 | |

| | | | | | |
|-------|---|---|---|---|--|
| 3.6 | Commit to reflective continuous improvement of all business software and focus on maintaining key student and business data in the primary ERP while achieving integration with ancillary systems to realize the greatest return-on-investment. | | | | |
| 3.6.1 | Utilize the tools we have more effectively by engaging vendor consultants to address challenges and present best practices. | 1 | 2 | | |
| 3.6.2 | Evaluate and implement a financial reporting solution with full integration. | | 2 | | |
| 3.6.3 | Implement a Financial Aid self-service solution. | 1 | | | |
| 3.6.4 | Integrate the Hiring form with the ERP to streamline the process. | 1 | | | |
| 3.6.5 | Improve integration and reporting for undergraduate and graduate admissions. | 1 | 2 | | |
| 3.6.6 | Improve access to information systems using single sign-on technology to create a personalized experience for students, faculty, and staff. | | 2 | 3 | |
| 3.6.7 | Hire one (1) application developer staff member who will support SharePoint projects, workflows, and integration with enterprise systems. | 1 | | | |

| | | | | | |
|-------|--|---|---|---|---|
| 3.7 | Fully evaluate and challenge existing business software solutions to increase efficiencies and reduce costs. | | | | |
| 3.7.1 | Engage Ellucian to provide Action Planning recommendations within the suite of products offered to strengthen operational excellence and foster institutional effectiveness. | 1 | | | |
| 3.7.2 | Consider the offerings of other ERP solutions to evaluate the business case, costs, and potential savings if a change were recommended. | | 2 | 3 | |
| 3.7.3 | Make a recommendation for an ERP solution that will serve the future business needs and improve efficiencies. | | | | 4 |

QUALITY OF SERVICE

1 Year 1 2 Year 2 3 Year 3 4 Year 4

| # | RECOMMENDATION | YEAR(S) | | | |
|-------|--|---------|---|---|---|
| 4.1 | Tailor a customer service mission to the broader support philosophy of the university that is sustainable and based on metrics. | | | | |
| 4.1.1 | Enable a well-constructed service desk software tool that can handle support across the enterprise of I&CT. | | 2 | | |
| 4.1.2 | Help our users help themselves – update online documentation regularly, write relevant blog posts, and create self-service tools that are easy to use. | | 2 | | |
| 4.1.3 | Create a shared services unit to provide portions of staff time to support higher technical areas (Human Resources, Police and Security, the Phoenix Card office, etc.). | | | 3 | |
| 4.1.4 | Build a support structure that supports growth in facilities and expansion of the campus in remote locations. | | | 3 | |
| 4.1.5 | Hire two (2) general computer technicians with assigned time to operational areas requiring additional technology support due to complexity and data needs. | | | 3 | 4 |
| 4.1.6 | Evaluate current positions and titles to meet industry standards and best practices. | | 2 | | |
| 4.2 | Invigorate a technology department-wide philosophy of sustaining core services, supporting innovation, facilitating growth, and promoting financial stewardship. | | | | |

| | | | | | |
|-------|---|---|---|--|--|
| 4.2.1 | Scaffold greater alliances with business partners during the budget and planning processes to plan new technology projects collectively. | 1 | | | |
| 4.2.2 | Examine basic computer needs for all users to determine the new standard for personal computing and telecommunications. | | 2 | | |
| 4.3 | Establish a strong Information Technology Governance portfolio, including representatives from several campus constituencies. | | | | |
| 4.3.1 | Build upon ATACC (Academic Technology and Computing Committee) relationships. | 1 | | | |
| 4.3.2 | Establish a Student Advisory Board for active student feedback. | 1 | | | |
| 4.3.3 | Establish an Administrative Advisory Group and redefine the Administrative Computing User Group. | | 2 | | |
| 4.3.4 | Create data governance guidelines for students, faculty, and staff in partnership with advisory groups. | 1 | | | |
| 4.4 | Create a strong Project Management methodology, enabling nimble and efficient movement within projects while creating an industry standard approach to initiatives. | | | | |
| 4.4.1 | Create an internal Project Management certification program for I&CT staff. | 1 | | | |
| 4.4.2 | Formally track and manage all high-impact enterprise projects throughout the division. | | 2 | | |

| | | | | | |
|-------|--|---|---|---|---|
| 4.5 | Provide professional development opportunities to our business partners and technology staff to create a culture that encourages community support. | | | | |
| 4.5.1 | Establish baseline technical proficiencies that should be met by all staff in order to work effectively in a collaborative, fast-paced environment. | | | 3 | |
| 4.5.2 | Partner with the Office of Leadership and Professional Development, Academic Affairs, and Human Resources to investigate digital badges and the development of a system to track professional development activity, acknowledge skill development, and show proven competencies for staff. | | | 3 | |
| 4.5.3 | Train staff members to improve their understanding and use of Colleague and other key information systems, and utilize Ellucian's eLearning library to more effectively learn about department specific functionality. | 1 | 2 | 3 | 4 |
| 4.5.4 | Identify and train key staff members in departments across campus to serve in the Technology Champion Program and become a resource for training within their department and across the campus community. | | 2 | 3 | 4 |
| 4.5.5 | Identify and train key faculty members in departments across campus to serve as leaders for integrating technology into teaching and learning. | | 2 | | |
| 4.6 | Perform an assessment of the Instructional and Campus Technologies brand and implement a marketing and communications plan. | | | | |
| 4.6.1 | Assess the branding and current marketing of Instructional and Campus Technologies as a central resource for the larger Elon community at all campus locations. | | 2 | | |

| | | | | | |
|-------|---|--|---|--|---|
| 4.6.2 | Collect stakeholder feedback, propose a change to the parent name of the division to the Office of Information Technology, and evaluate the names of the five departments within technology. | | 2 | | |
| 4.6.3 | Implement a marketing and communications plan to show the value of technology at Elon and to meet the changing informational needs of faculty, staff, students, prospective students, and alumni. | | | | 4 |

INFORMATION SECURITY

1 Year 1 2 Year 2 3 Year 3 4 Year 4

| # | RECOMMENDATION | YEAR(S) | | | |
|-------|---|---------|---|---|---|
| 5.1 | Provide a secure and robust information infrastructure that supports and protects the enterprise and its systems. | | | | |
| 5.1.1 | Complete external audits for data penetration and policy evaluation every two (2) years. | | 2 | | |
| 5.1.2 | Hire one (1) Information Security Director to focus on data security, policy, and compliance. | 1 | | | |
| 5.1.3 | Create and train an information security team using internal staff to assist with communications and procedures. | | | 3 | |
| 5.1.4 | Develop new IT security policies and adopt best practices for compliance of sensitive data. | | | 3 | |
| 5.1.5 | Integrate a Security Information and Event Management system into our infrastructure for logging and tracking incidents. | 1 | | | |
| 5.1.6 | Increase data security training for positions accessing sensitive data. | | 2 | 3 | 4 |
| 5.1.7 | Redefine and publish business continuity expectations with critical systems for operations (Disaster Recovery Models). | | | 3 | |
| 5.1.8 | Create and provide a robust training program for different compliance areas that handle and regulate sensitive institutional data, such as FERPA and other similar information. | | 2 | | |

| | | | | | |
|--------|--|---|---|--|--|
| 5.1.9 | Provide faculty and staff tools necessary to detect and eliminate unnecessary sensitive data on Elon University systems. | | 2 | | |
| 5.1.10 | Integrate Security Analysis into the evaluation and purchasing process for software that will process or store High Risk Data so that appropriate data security requirements can be determined early in the process. | 1 | | | |

ORGANIZATIONAL STRUCTURE



STRATEGIC PLAN REVIEWERS

The 2015-2019 I&CT Strategic Plan was reviewed by the following members of the Elon University community throughout the planning and writing process:

Haya Ajjan, Assistant Professor of Management Information Systems

Jon Dooley, Assistant Vice President for Student Life/Dean of Campus Life

Dan Anderson, Vice President for University Communications

Peter Felten, Assistant Provost, Executive Director – Center for the Advancement of Teaching & Learning and Center for Engaged Learning & Professor of History

Janna Anderson, Professor of Communications

Stephen Folger, Department Chair/Program Director and Professor of Physical Therapy Education

Brooke Barnett, Associate Provost for Inclusive Community and Professor of Communications

Dennis Franks, Director of Campus Safety and Police

John Barnhill, Assistant Vice President for University Advancement

Chris Fulkerson, Assistant Vice President for Administrative Services and Assistant Professor of Communications

Jeremy Ball, Director of Advancement Services

Cindy Bennett, Assistant Professor of Physician Assistant Studies

Paul Harrod, Director, Internal Audit

Luke Bierman, Dean and Professor of Law

Evan Heiser, Assistant to the Vice President for Student Life and Dean of Students

David Blank, Director of Athletics

Joel Hollingsworth, Senior Lecturer in Computing Sciences and Chair of the Department of Computing Sciences

Connie Book, Former Associate Provost for Academic Affairs and Professor of Communications

Steven House, Provost and Executive Vice President of Academic Affairs and Professor of Biology

Robert Buchholz, Associate Vice President for Facilities Management and Director of Physical Plant

Antonio Izzo, Associate Professor of Biology and Former Faculty Fellow for Technology

Jeffrey Carpenter, Assistant Professor of Education and Director of Teaching Fellows Program

Smith Jackson, Vice President for Student Life and Dean of Students and Associate Professor

Jeffrey Coker, Director of Elon Core Curriculum and Associate Professor of Biology

Susan Kirkland, Assistant Vice President for Business and Finance

Ayesha Delpish, Associate Professor of Statistics and Chair of the Department of Mathematics and Statistics

Derek Lackaff, Assistant Professor of Communications

Jim Piatt, Vice President for University Advancement

Todd Lee, Professor of Mathematics and Faculty Fellow for Technology (2015-2018)

Dave Powell, Professor of Computing Sciences and Business Administration

Maurice Levesque, Associate Provost for Assessment and Academic Operations and Professor of Psychology

Jean Rattigan-Rohr, Faculty Administrative Fellow, Assistant to the President, Director of the Center for Access and Success and Associate Professor

Deandra Little, Director of the Center for the Advancement of Teaching and Learning and Associate Professor of English

Elizabeth Rogers, Dean of the School of Health Sciences and Professor of Physical Therapy Education

Deborah Long, Interim Dean of the School of Education and Professor of Education

Joan Ruelle, Dean and University Librarian

Sean MaMahon, Assistant Professor of Entrepreneurship

Vicki Siler, Reference/Emerging Technologies Librarian and Assistant Professor

Brad Moore, University Architect and Director of Planning, Design and Construction Management

Gabie Smith, Interim Dean of Elon College, the College of Arts and Sciences and Professor of Psychology

Scott Morrison, Assistant Professor of Education

Megan Squire, Associate Professor of Computing Sciences

Max Negin, Assistant Professor of Communications and Chair of Academic Technology and Computing Committee

Jeff Stein, Associate Vice President, Chief of Staff, Secretary to the Board of Trustees and Assistant Professor of English

Amy Overman, Associate Professor of Psychology and Associate Director, Center for the Advancement of Teaching and Learning

Clay Stevenson, Lecturer in Music

Rodney Parks, University Registrar and Assistant Professor

Raghu Tadepalli, Dean of the Martha and Spencer Love School of Business

Paul Parsons, Dean of the School of Communications

Barbara Taylor, Associate Professor of Computing Sciences

Jana Lynn Patterson, Associate Vice President for Student Life, Dean of Student Health and Wellness, and Assistant Professor

Kyle Wills, Senior Associate Athletics Director for Business and Operations

Tim Peebles, Associate Provost for Faculty Affairs and Professor of English

Honglin Xiao, Associate Professor of Geography

Greg Zaiser, Vice President for Admissions and Financial Planning

EXTERNAL CONSULTANT REPORT

In the fall of 2012, I&CT engaged the expertise of Patricia Todus, an Information Technology Executive Consultant, to complete an external review of the organization's goals, commitment and ability to serve the Elon University community, and overall value to the university. As the former Northwestern University Associate Vice President and Chief Information Officer, Ms. Todus has a rich history in leading technology strategic planning in higher education. Her recommendations, based on a review of the organization, were a foundation for the resulting Technology Strategic Plan that focused less on tactics and more on strategic design for I&CT.

Summary of Recommendations

The external review was focused on three areas: I&CT Organizational Structure, Customer Service Expectations, and Governance Models. The following is a summary of Ms. Todus' recommendations:

I&CT Organizational Structure

- The current I&CT Organizational structure should be reviewed from a 'new perspective' that:
 - Considers the future demands of its customers and the business and academic plans for the University in a cost effective manner,
 - Hires and develops the I&CT technical and management expertise needed to fulfill these demands especially in the areas of Business Analytics, Security and Project Management,
 - Allows for increases in staff in critical areas and decreases in other areas,
 - Moves current and new I&CT functions into the appropriate organizational area,
 - Addresses the ongoing information technology changes in Higher Education,
 - Provides the means for I&CT to concentrate on the dynamic technology environment,
 - Provides for I&CT staff development and career growth,
 - Establishes more clearly defined staff expectations.
- Develop a strategic planning process that is collaborative and forward thinking and results in an Information Technology Strategic Plan that is strategic rather than tactical.
- Promotes communication across the I&CT organization to improve the staff's understanding of the University and I&CT's plans and projects. Encourage information sharing between I&CT areas.
- Review and create new position descriptions, where needed, which include clear position criteria, career growth and appropriate salary levels so the future needs of the University can be met. This will allow management to better define staff expectation, provide career growth and facilitate the recruitment needed.
- Review the support responsibilities of I&CT and determine what services can be eliminated, outsourced or redeployed elsewhere to the University to more effectively focus the I&CT staff on important current and emerging technologies.

- Review the staffing in the Information Systems and Technology area where there has been significant growth in servers, both hardware and virtual over the last five years with only a minimal increase in staff. After management review of the area consideration should be given to redeploy staff from other I&CT areas.
- Adopt a project management methodology and educate I&CT leaders and staff in the selected method.
- Establish a new project management position with the certifications and experience to provide continuous education, project monitoring and the authority to intervene on projects management and oversight to ensure that resources are used effectively, deadlines are met and the cost of technology initiatives is understood.
- Establish an I&CT Security and Compliance position that will provide ongoing monitoring of networks and systems to ensure that they are resistant to internal and external attacks and adhere to federal and local laws. This position will also be responsible for developing security and compliance policies as they relate to Elon and importantly, educating the University community of these and other security and compliance issues on an ongoing basis.
- Establish new Business Analytics positions in I&CT to lead the effort for providing a University wide solution for business analytics to facilitate easier and accurate reporting and decision making from authenticated data.
- Refine and communicate a customer service strategy across I&CT.
- Review the Help Desk operation including staff expertise and responsibilities, internal processes for provision of service, a service inventory, customer response levels, customer satisfaction levels and the types of staff and training needed to improve service.

Customer Service Expectations

- Engage the University community, under the leadership of the Office of the CIO, to discuss the components of a data dictionary and agree upon the definitions that will be uniform across the University. This will ensure that as information is accessed and used throughout the University from a variety of systems it will be consistent in definition.
- Improve customer communications regarding I&CT services available to them and those that are in planning. This will provide the University community with ongoing information about I&CT products and services and will allow I&CT to do a better job at setting customer expectations.
- Improve training and service/product documentation with customer input to ensure that their needs are being met.
- Anticipate the needs of the University community by exploring new and enhanced technologies and working closely with the community on a continuous basis to understand their “business” needs.

Governance

- Review the charter and membership of the current administrative system advisory committee with a focus on improving collaboration and an understanding of the community's needs and priorities.
- Consider establishing other advisory committees in specific areas as new services are being discussed or implemented or enhanced. Examples noted in this report are in the areas of business analytics and data dictionary. There are probably others that would prove worthwhile to I&CT and their customers.
- Utilize faculty members in discussion on "smart" classrooms, faculty training and overall faculty and student service improvements under consideration.
- Consider a student advisory group that could provide valuable information on student technology needs on and off campus.

ASSESSMENT OF PREVIOUS TECHNOLOGY PLANS

Continuing with its rich culture of planning, Elon University has completed numerous strategic plans, setting a pace for intense growth and maturity of services to our students, faculty, and staff.

The prior Technology Plans have coordinated broad technology initiatives to provide the much needed infrastructure to support the larger university goals and initiatives. Each of the previous Technology Plans served the needs of the emerging Elon.

2000-2004

The first plan outlined organizational needs and consolidated the staff into a unified structure. This plan also addressed support needs and increased staffing to meet the growing depth and complexities of Elon between 2000-2004.

2004-2007

The next plan focused more on academic support concerns arising from growing faculty and learning space needs. The broader networking infrastructure was redesigned to support the growth of the physical campus between 2004-2007. The reliability and functional strength of network services were fully recognized during this plan.

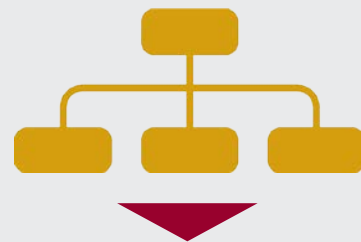
2008-2013

The most recent Elon University Technology Plan (2008-2013) centered on networking infrastructure, integration of support services, and organizational staffing enhancements. Several highlights include assisting numerous departments in the implementation of 3rd party software to improve their data analytics. Raisers Edge for University Advancement was new to Elon and was the beginning of a new era of integrating systems outside of the main business system - Ellucian Colleague. The staff in I&CT also improved in sophistication and external knowledge. The leadership was evaluated and minor adjustments were made to design the modern structure of support, academic technology, application development, and infrastructure. An external review was completed by the Associate Vice President and Chief Information Officer from Northwestern University to fully evaluate the organization. Those comments and recommendations can be found in the Appendix.

PAST PLANS

2000-2004

UNIFIED ORGANIZATIONAL STRUCTURE



2004-2007

ACADEMIC SUPPORT & ENHANCED INFRASTRUCTURE



2008-2013

NETWORKING INFRASTRUCTURE



2008-2013 TECHNOLOGY PLAN

SUCCESS HIGHLIGHTS

GOAL I

Improve on an excellent infrastructure from which the university can build technologies that support the mission.

KEY ACTIONS

- Developed a renewal and replacement budget for networking infrastructure supporting growth and complexity.
- Expanded funding for bandwidth and enhanced Internet services.
- Provided depth in security of systems using data and further integrated other systems into the shared business system.
- Classroom technology was standardized across campus using high levels of engaged learning tools to support instruction.

GOAL II

Leverage technology through innovation and integration to improve university services, save university resources and to further academic and administrative initiatives.

KEY ACTIONS

- Created significant online resources using the Technology website and the Wiki to provide increased 24/7 self-support resources.
- Negotiated technology related contracts and departmental software services to save resources across the Elon enterprise. Provided depth in security of systems using data and further integrated other systems into the shared business system.
- Launched Phase I of the cloud computing initiative to reduce the footprint of physical server equipment and expand the flexibility of computing power in the cloud.
- Evaluated technology support tools utilized by academic and administrative areas of Elon.
- Developed several programs to reduce paper waste in printing and copying while automating processes to significantly reduce staff time.

GOAL III

Develop an organization that meets the university requirements and is positioned for the future to keep pace with changing needs.

KEY ACTIONS

- The current IT organization was aligned with current university structures to make sense of support, academic, application, and infrastructure needs.
- Several key hires were completed to expand the depth and knowledge base required to support complexities of information technology. An in-depth evaluation was completed on all employees to assess skills and placement within the organization so as to provide professional development.
- The Technology Help Desk was rebranded to the Technology Service Desk to clearly note the depth of all services supported by the department. This included a significant offering of self-help tools to meet the needs of students, faculty, and staff who have support needs outside the traditional operating hours.

REFERENCES AND FUTURE READINGS

- Brown, M. (2015). Six Trajectories for Digital Technology in Higher Education. *EDUCAUSE REVIEW*, 50 (4). Retrieved from <http://www.educause.edu/ero/article/six-trajectories-digital-technology-higher-education>.
- CEB: The Corporate Executive Board Company. (2015). Emerging Technology Roadmap (2015-2018). Retrieved from <http://www.executiveboard.com>. (password protected report)
- EAB: The Advisory Board Company. (2015). The Academic Efficiency Audit: Understanding and Managing the Drivers of Academic Costs. Business Affairs Forum. (password protected report)
- Educause Executive Briefing. (2013). The Future of Administrative IT: Expert Panel Findings and Recommendations. Retrieved from <https://net.educause.edu/ir/library/pdf/PUB4006.pdf>.
- Elon University. (2009). Elon Commitment. Retrieved from <https://www.elon.edu/e-web/administration/president/strategicplan2020/default.xhtml>.
- Grajek, S. (2014). Top 10 IT Issues 2014: Be the Change You See. *EDUCAUSE REVIEW*, 49 (2). Retrieved from <http://www.educause.edu/ero/article/top-ten-it-issues-2014-be-change-you-see>.
- Grajek, S. (2015). Top 10 IT Issues 2015: Inflection Point. *EDUCAUSE REVIEW*, 50 (1). Retrieved from <http://www.educause.edu/ero/article/top-10-it-issues-2015-inflection-point>.
- Johnson, L., Adams Becker, S., Estrada, V., Freeman, A. (2014). NMC Horizon Report: 2014 Higher Education Edition. The New Media Consortium. Austin, Texas. Retrieved from <http://www.nmc.org/publication/nmc-horizon-report-2014-higher-education-edition/>.
- Johnson, L., Adams Becker, S., Estrada, V., and Freeman, A. (2015). NMC Horizon Report: 2015 Higher Education Edition. The New Media Consortium. Austin, Texas. Retrieved from <http://www.nmc.org/publication/nmc-horizon-report-2015-higher-education-edition/>.
- North Carolina State University Department of Physics (n.d). SCALE-UP Project. Retrieved from <http://www.ncsu.edu/per/scaleup.html>.
- Oblinger, D. (2005). Leading the Transition from Classrooms to Learning Spaces. *EDUCAUSE REVIEW*, 40 (1). Retrieved from <http://er.educause.edu/articles/2005/1/leading-the-transition-from-classrooms-to-learning-spaces>.

December 1, 2015